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BOOKS AND PERIODICALS.

Tables of Logarithms to Five Places of Decimals with Auxiliary Tables. Edited by Edwin S. Crawley, Ph. D., Assistant Professor of Mathematics in the University of Pennsylvania. 8vo. Cloth, xxxii+76 pages. Price, 75 cents. Published by the author.

These tables have been prepared to accompany Dr. Crawley's *Elements of Trigonometry* and we are told by the author that great care has been taken to secure accuracy.—the proof having been compared twice, number by number, with different standard tables, *e. g.* Vega's seven-place tables, seventy-fourth edition edited by W. L. Fischer, and Gauss's five-place tables, twentieth edition. In addition to this careful comparison, the method of differences was also applied as a further check. A table not usually found in a collection of tables of this sort, and one which is quite useful in many lines of mathematical work, is table VI in which every degree, minute and second from 0 to 180° is expressed in Radians.

B. F. F.

A Short History of Astronomy. By Arthur Berry, M. A., Fellow and Assistant Tutor of King's College, Cambridge; Fellow of University College, London. 8vo. Cloth, xxxii+440 pages. Price, \$1.50. New York: Charles Scribner's Sons.

In this work we have an interesting account of the progress and development of Astronomy from the earliest time down to the present day, and presented in a form intelligible to readers having no special knowledge of either mathematics or Astronomy. Only the essence is here preserved. Little mention is made of Astronomical Instruments, it being held by the author that little pleasure or profit is derived from a written description of scientific Instruments. A most valuable and interesting feature of the work is the short biographical sketches of leading Astronomers, accompanied by an excellent portrait printed on heavy paper. Of the biographical sketches accompanied by portraits we mention Copernicus, Tycho Brahe, Galilei, Kepler, Newton, Bradley, Lagrange and William Herschel. The numerous illustrations throughout the work are very good and the reproductions from original photographs are first class. The book is one of great interest to the Astronomer as well as to the ordinary student and amateur.

B. F. F.

Mathematical Essays and Recreations. By Herman Schubert, Professor of Mathematics in the Johanneum, Hamburg, Germany. Translated from the German by Thomas J. McCormack. Red Cloth, 148 pages. Price, 75 cents. Chicago: The Open Court Publishing Co.

The following subjects are discussed in a popular though scientific manner: (1) "The Definition and Notion of Number," (2) "Monism in Arithmetic," (3) "On the Nature of Mathematical Knowledge," (4) "Magic Squares," (5) "The Fourth Dimension," (6) "The History of the Squaring of the Circle."

The first three articles of the book are concerned with the construction of arithmetic as a monistic science. Number is defined as the result of counting. Fractional numbers, complex numbers, negative numbers, irrational numbers, imaginary numbers are all extensions of primitive results, made according to what Hankel calls "the principle of permanence," and Schubert the "principle of no exception." Arithmetic thus takes the general shape of a system of logical forms having consistency and coherency among themselves. Professor Schubert being one of the most successful teachers in Germany, his sketch on monistic arithmetic will be found exceedingly interesting and suggestive. Any other theory of the number concept seems to me absolutely untenable.

The article on "Fourth Dimension" is a clear and easily understood exposition of the apparently mysterious subject. Professor Schubert clearly shows what is meant by dimensions as used in science and what is the legitimate function of a fourth dimension in mathematics. This article alone is worth the price of the book. The "History of the Squaring of the Circle" is full of interest from first to last, and is quite complete.

B. F. F.

The Elements of Physics. A Text-book for High Schools and Academies. By Alfred Payson Gage, Ph. D., Author of Principles of Physics, Introduction to Physics, etc. Revised Edition. 12mo. Half Leather, 381 pages. Introduction price, \$1.12. New York and Chicago: Ginn & Co.

In bringing out the revision of this book, all the excellencies of the original work have been retained while many improvements in method of presentation have been introduced. Recent advances in the industrial applications of physical principles have received due attention. A large number of problems and practical exercises are furnished throughout the book.

B. F. F.

A Text-book of General Astronomy for Colleges and Scientific Schools. By Charles A. Young, Ph. D., LL. L., Professor of Astronomy in Princeton University. Revised Edition. 8vo. Half Leather, 630 pages. Price, \$2.50. Boston, U. S. A., and London: Ginn & Co.

In bringing out the revised edition of this book, the best book on astronomy has been improved. Our acquaintance with this work was made by its use for several years in the class-room, and we have found it very satisfactory in every particular. The revised edition embodies the new and important results which have been obtained during the last ten years, and thereby the continued popularity of the work is insured for sometime in the future.

B. F. F.

A Text-book of Physics. By G. A. Wentworth, Author of a Series of Text-books in Mathematics, formerly Professor of Mathematics in Phillips Exeter Academy, and G. A. Hill, Author of Geometry for Beginners, formerly Assistant Professor of Physics in Harvard University, 12mo. Half Leather, 440 pages. Price for Introduction, \$1.15. Boston and Chicago: Ginn & Co.

This work aims to give a rational explanation of the more important physical phenomena, and to prepare the way for further investigation and study of physical sciences. The book has many points of excellence to commend it to public favor.

B. F. F.

ERRATA.

Page 42, line 9, for " $\angle CEM$ " read $\angle CFM$.

line 12, for " $A-60^\circ$ " read $B-60^\circ$.

line 22, for "angle FCL " read angle FCM .

line 23, for "angle EMC " read angle PMC .

line 24, for " $x+A+C-60^\circ$ " read $x+B+C-60^\circ$.

line 24, for " $A+x+y$ " read $B+x+y$.

Vol. V., No. 10, page 231, line 7, of solution, for " $\triangle ABC = \triangle CPB$ " read $\triangle ABC + \triangle CPB$.

Same, line 8, for " $\frac{r_1 b}{2} = \frac{r_1 c}{2}$ " read $\frac{r_1 b}{2} + \frac{r_1 c}{2}$.

Same, line 11, for " $= \frac{r_2 a}{2}$ " read $+ \frac{r_2 a}{2}$.